REMARKS

Claims 1-18 and 42-47 remain pending in this application.

As an initial matter, Applicants reaffirm the election to prosecute the Group I claims, i.e. claims 1-18 and 42-47. Thus, claims 1-18 and 42-47 remain pending in the present application.

Additionally, Applicants respectfully assert that the Examiner reconsider the restrictions of the claims and examine claim 23, which is a linking claim. Claim 23 is a claim to "means" for practicing the process claims set forth in the Group I claims. According to MPEP § 806.05(e), a "means" claim is a linking claim and must be examined with the elected invention. If it is ultimately allowed, rejoinder is required. See MPEP § 809.04. Claim 23 satisfies the criteria set forth in MPEP 806.05(e) as a linking claim, and is therefore entitled to examination with the elected Group I claims. Applicants respectfully assert that no undue burden is placed upon the Office in examining claim 23 with the Group I claims. Therefore, Applicants hereby respectfully request that the Examiner reconsider and include claim 23 in the elected Group I claims.

Claims 1, 14, and 43-47 have been amended to address the objections of the Examiner. Therefore, Applicants respectfully assert that the Examiner withdraw the objections and allow claims 1, 14, and 43-47.

The Examiner rejected claims 11-13, 44, and 46 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Amendments to the claims have been made to

address the Examiner's concerns, therefore, Applicants respectfully assert that claims 11-13, 44, and 46 are now allowable.

The Examiner rejected claims 1-3, 7, 9, 10, 14, 15, 18, 42, 43, 46, and 47 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,581,029 (***Fischer***). Applicants respectfully traverse this rejection.

Applicants respectfully assert that ***Fischer*** does not disclose, suggest or teach all of the elements of claim 1 or claim 42. The Examiner cites ***Fischer*** to disclose a simulation process for the creation of a simulated device. Variables in the associated process steps may be varied to generate a simulated semiconductor device. See column 1, lines 27-54. ***Fischer*** generally relates to modules that are used to perform simulation, as well as to a system for eliminating redundant modules in a simulation system. See column 5, lines 10-39. However, ***Fischer*** does not disclose performing process simulations to produce simulation data and interfacing the simulation data with an actual process control environment for controlling the manufacturing process of an actual semiconductor device, as called for by claims 1 and 42 of the present invention.

Fischer merely discloses performing simulations to generate a simulated semiconductor device. See column 1, lines 33-36. ***Fischer*** discloses utilizing executable modules that may represent steps in process simulation flow and optimizing the modules to reduce redundancy of the modules. ***Fischer*** does not disclose interfacing the simulation data to actual manufacturing of semiconductor devices. The disclosure of ***Fischer*** is in the realm of the creation of a simulated device. Therefore, ***Fischer*** does not disclose the process simulation function and the

interfacing of simulation data resulting from a process simulation function with an actual process control environment for controlling the actual manufacturing process of a semiconductor device. Therefore, ***Fischer*** does not disclose all of the elements of claim 1. One of ordinary skill in the art would not be able to disclose all of the elements of performing a process simulation to produce simulation data and interfacing the simulation data with a process control for actual manufacturing process control of the actual processing of the semiconductor device based upon the redundancy module optimization disclosed by ***Fischer***. Therefore, claim 1 of the present application is allowable. Additionally, claim 42, which also calls for applying simulation results and interfacing the results with an actual process control environment, is also allowable for at least the reasons cited above.

Independent claims 1 and 42 are allowable for at least the reasons cited above. Claims 2-18, which depend from independent claim 1, and claims 43-47, which depend from independent claim 42, are also allowable for at least the reasons cited above.

The Examiner rejected claims 4-6, 8, 16, and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ***Fischer***. Applicants respectfully traverse this rejection.

Applicants respectfully assert that claims 4-6, 8, 16, and 17 are not obviated by one skilled in the art upon a reading of ***Fischer***. The Examiner states that ***Fischer*** does not explicitly teach the process task of defining photolithography, etch, chemical mechanical polishing (CMP), and diffusion process tasks and states that it would have been obvious to one of ordinary skill in the art to include these process tasks upon a reading of ***Fischer***. Applicants respectfully disagree. Since ***Fischer*** does not disclose all of the elements of the underlying claims from

which claims 4-6, 8, 16, and 17 depend (*i.e.*, claims 1 and 42), using the argument that one of ordinary skill in the art would implement photolithography, etch, CMP, and diffusion process tasks, to the teaching of ***Fischer*** would still not result in all of the elements called for by claims 4-6 and 8. As described above, the underlying claim 1, from which claims 4-6, and 8 are dependent, are not disclosed, taught, or suggested by ***Fischer***, therefore, merely adding the concepts of photolithography, etch, CMP, and diffusion processes, would not be able to obviate the subject matter called for by claims 4-6, and 8. Therefore, claims 4-6, and 8 are allowable for at least the reasons cited above.

Furthermore, regarding claim 16, the Examiner stated that ***Fischer*** does not explicitly teach the predictive state analysis and the response to execution of a model behavior, and stated that it would have been obvious to one of skill in the art to implement it into claim 16. Applicants respectfully disagree. Without improper hindsight, one of ordinary skill in the art would not be able to produce a predictive state analysis in response to the execution of a model behavior into the teaching of ***Fischer*** to obviate the subject matter of claim 16. The Examiner provides no evidence to the contrary. Additionally, even if one of ordinary skill in the art implemented the predictive state analysis in response to the execution of a model behavior, all of the elements of claim 16 still would not be disclosed since ***Fischer*** does not provide all of the elements for the underlying claim (claim 1, as described above), from which claim 16 ultimately depends. Therefore, one of ordinary skill in the art would not be able to obviate all of the elements of claim 16 upon a reading of ***Fischer***. Therefore, claim 16 is also allowable for at least the reasons cited above.

Regarding claim 17, the Examiner states that ***Fischer*** does not expressly teach the subject matter of sensitive state analysis in response to the execution of said model behavior, and stated that it would have been obvious to one of ordinary skill in the art to implement it into claim 17. Applicants respectfully disagree. Without improper hindsight, one of ordinary skill in the art would not be able to produce a sensitive state analysis in response to the execution of a model behavior into the teaching of ***Fischer*** to obviate the subject matter of claim 17. The Examiner provides no evidence to the contrary. Additionally, even if one of ordinary skill in the art implemented the sensitive state analysis in response to the execution of a model behavior, all of the elements of claim 17 still would not be disclosed since ***Fischer*** does not provide all of the elements for the underlying claim (claim 1, as described above), from which claim 17 ultimately depends. Therefore, one of ordinary skill in the art would not be able to obviate all of the elements of claim 17 upon a reading of ***Fischer***. Therefore, claim 17 is also allowable for at least the reasons cited above.

In light of the arguments presented above, Applicants respectfully assert that claims 1-18 and 42-47 are allowable. In light of the arguments presented above, a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Houston, Texas telephone number (713) 934-4069 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

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IN THE CLAIMS

1. (Currently amended) A method, comprising:

defining a process task;

performing a process simulation function to produce simulation data corresponding to said process task; and

interfacing said simulation data with a process control environment for controlling a manufacturing process of a semiconductor device[;].

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2. (Original) The method described in claim 1, further comprising performing a manufacturing process of the semiconductor device based upon said interfacing of said simulation data with said process control environment.

3. (Original) The method described in claim 2, wherein performing manufacturing process of said semiconductor device further comprises processing a semiconductor wafer.

4. (Original) The method described in claim 3, wherein defining a process task further comprises defining a photolithography process task.

5. (Original) The method described in claim 3, wherein defining a process task further comprises defining an etch process task.

6. (Original) The method described in claim 3, wherein defining a process task further comprises defining a chemical-mechanical polishing process task.

7. (Original) The method described in claim 3, wherein defining a process task further comprises defining an implant process task.

8. (Original) The method described in claim 3, wherein defining a process task further comprises defining a diffusion process task.

9. (Original) The method described in claim 3, wherein performing a process simulation function further comprises:

preparing at least one processing model for simulation;

executing a simulation using said processing model to generate a simulation result;

determining whether said simulation result is within a predetermined specification; and

applying said simulation result into at least one manufacturing parameter in response to a determination that said simulation result is within said predetermined specification.

10. (Original) The method described in claim 9, further comprising modifying said model in response to a determination that said simulation result is not within said predetermined specification.

11. (Currently Amended) The method described in claim 9, wherein preparing at least one processing model for simulation further comprises:

defining at least one processing model <u>to generate a defined model</u>;

validating said defined model;

acquiring data for operation of said defined model; and

populating said defined model with said acquired model.

12. (Original) The method described in claim 11, wherein defining at least one processing model further comprises defining at least one of a device physics model, a process model, and an equipment model.

13. (Original) The method described in claim 11, wherein validating said defined model further comprises integrating a plurality of defined models into a simulation environment.

14. (Currently amended) The method described in claim 9, wherein executing said simulation using said processing model to generate a simulation result further comprises:

modulating at least one [variability] variable in said processing model;

executing a model behavior based upon said [variability] variable;

determining at least one component of variation based upon said execution of the model behavior; and

determining whether said at least one component of variation is within a predetermined specification.

15. (Original) The method described in claim 14, wherein modulating at least one variability in said processing model further comprises modulating a temperature component.

16. (Original) The method described in claim 14, further comprising performing a predictive state analysis in response to said execution of said model behavior.

17. (Original) The method described in claim 14, further comprising performing a sensitivity analysis in response to said execution of said model behavior

18. (Original) The method described in claim 9, wherein applying said simulation result into at least one manufacturing parameter further comprises modifying at least one manufacturing control parameter based upon said simulation result.

Claims 19-41 have been withdrawn.

42. (Currently amended) A method, comprising:

defining a process task;

performing a process simulation function to produce simulation data corresponding to said process task, said process simulation function comprising:

preparing at least one processing model for simulation;

executing a simulation using said processing model to generate a simulation result;

determining whether said simulation result is within a predetermined specification; and

applying said simulation result into at least one manufacturing parameter in response to a determination that said simulation result is within said predetermined specification[.]; and

interfacing said simulation data with a process control environment for controlling a manufacturing process of a semiconductor device;

43. (Currently amended) The method described in claim [38] 42, further comprising modifying said model in response to a determination that said simulation result is not within said predetermined specification.

44. (Currently amended) The method described in claim [38] 42, wherein preparing at least one processing model for simulation further comprises:

defining at least one processing model, to generate a defined model;

validating said defined model;

acquiring data for operation of said defined model; and

populating said defined model with said acquired model.

antecedent. Is this the defined model?

45. (Currently amended) The method described in claim [40] 44, wherein defining at least one processing model further comprises defining at least one of a device physics model, a process model, and an equipment model.

46. (Currently amended) The method described in claim [40] 44, wherein validating said defined model further comprises integrating a plurality of defined models into a simulation environment.

47. (Currently amended) The method described in claim [38] 42, wherein executing said simulation using said processing model to generate a simulation result further comprises:

modulating at least one [variability] variable in said processing model;

executing a model behavior based upon said [variability] variable;

determining at least one component of variation based upon said execution of the model behavior; and

determining whether said at least one component of variation is within a predetermined specification.

Claims 48-55 have been withdrawn.